

## OUR ASTRONOMICAL COLUMN.

BRILLIANT METEOR OF OCTOBER 7.—A very fine meteor, which illuminated the heavens like a flash of lightning, was observed at various places in the west of England on October 7 at 10.35 p.m. It was seen by Mr. F. T. Naish at Bishopston, Bristol, and he recorded the position of the streak, which endured for nearly half a minute, as from  $337^{\circ}+8^{\circ}$  to  $327^{\circ}-2^{\circ}$ . As observed by Miss Eleonora Armitage at Swainswick, near Bath, the meteor is described as coming rapidly from overhead and disappearing in Aquila. It left a luminous trail about  $10^{\circ}$  long, lasting for a few seconds.

Mr. F. C. Carey, of H.M.S. *Illustrious*, Devonport, noticed a lightning-like flash, and on looking upwards saw in due east, altitude  $60^{\circ}$ , a luminous train which was brighter in the upper portion and remained visible for several seconds.

The meteor was also visible from Keynsham, near Bristol, and by several other observers at Bristol.

From the data collected by Mr. Denning, he finds that the meteor had a probable radiant in Gemini, and that its height was from about seventy-four to fifty-two miles. The position of the flight was from over Wiltshire to the English Channel, about ten miles east of Paignton, Devonshire. Further observations are needed of a more exact character to determine its real path accurately. The meteor was a very swift one of the Leonid type, and it appeared on a very unsettled, showery evening, when, unfortunately, the sky was cloudy at many places.

COMETARY OBSERVATIONS IN 1909 TO 1912.—The principal contents of No. 12 of the *Mitteilungen der Hamburger Sternwarte* relate to the observations made of comets which appeared in the interval included in the years 1909 to 1912. The observations there recorded are both visual and photographic, the former being made with an equatorial of 256 mm. aperture and 3.02 m. focal length, and the latter with a 158 mm. Petzval objective of 760 mm. focal length, and a 5-in. Cooke triplet of 600 mm. focal length. Dr. K. Graff gives an account of the physical observations made with the large equatorial, and accompanies his remarks with an excellent series of drawings of the detailed structures in the heads of the various comets observed. Prof. A. Schwassmann limits his account to Brooks's comet (1911c), and describes in detail the chief points which are noticeable on the fine series of photographs which accompany the text. This publication also includes the observations made for the determinations of the positions of the comets and numerous minor planets, all made with the large equatorial by the observers, Dr. K. F. Bottlinger, Dr. K. Graff, and Herr H. Thiele.

NORMAL SYSTEM OF WAVE-LENGTHS IN THE SPECTRUM OF THE IRON ARC.—In this column for October 2 reference was made under the heading "The Wave-lengths of Certain Iron Lines" to the work of Dr. F. Goos. The current number of *The Astrophysical Journal* (vol. xxxviii., No. 2, p. 141) contains a further contribution by him towards "the establishment of a normal system of wave-lengths in the arc spectrum of iron." The main object of the communication is to show that it is not sufficient to prescribe a current of 5 to 10 amperes for the arc, as was adopted by the International Solar Union, but that it is absolutely necessary to define the manner of burning and the part of the arc used. Dr. Goos recommends the following procedure, based on many experiments:—

For the normal spectrum of iron he proposes an arc 5 mm. long (separation of the rounded ends from each other) between iron rods 6 mm. in diameter and with a current of 4 amperes. It should be used on a

220-volt circuit; the potential difference at the arc then falls to between 45 and 49 volts. It should be used with a pole changer, and the arc so projected on the slit of the spectrograph with the condensing lens that only a portion of the arc at the middle is used extending 1.5 mm. vertically at most. In order to show the importance of specifying exactly the arc conditions to be used, he directs attention to the difference in the values of the three observers of the normals of the second order. Thus he compares the wave-lengths of the iron arc as published by Kayser and himself with the measurements of St. John and Ware. He also includes measurements of the widths of some selected iron lines. The main cause of all the differences is due to pressure changes, and the whole investigation shows that the iron arc is far from homogeneous. Dr. Goos finally questions whether the measurements of the normals of the third order form a really homogeneous system, and he proposes that an entirely new series of observations should be made with more uniform light-sources.

## MICROSCOPICAL EXAMINATION OF SKIN AND LEATHER.

IN the May number of the *Bulletin de la Société d'Encouragement pour l'Industrie Nationale*, M. Georges Abt, of the Pasteur Institute, contributes an interesting and valuable paper on the microscopical examination of skin and leather, with special reference to salt stains and their effect.

The author first describes in detail the methods used for cutting and staining sections of skin. These are the general methods familiar to microscopists, but are varied slightly in order to differentiate the important histological elements of the skin for the particular purpose in view. The author endeavours to classify the different changes taking place in the skin during the various processes of manufacture into leather, and even goes so far as to suggest that the microscopical examination of the skin or hide in the various stages might be used to control the various processes.

In connection with his special investigation, the effect of salt stains, the author has prepared sections of the grain, flesh, and interior of the raw skin, the pelt, and of the finished leather, showing the characteristics of salt stains and their effect.

The work is supplementary, and supports the hypothesis deduced by the same writer from a chemical investigation of these stains ("Collegium," 1912, pp. 388-408). M. Abt differentiates between two types of salt stains. Stains of the first class are distinguished by the presence of calcium phosphate in places where grains of calcium sulphate have been deposited from the salt. In the section through these stains the nuclei of the connective tissue are very prominent. The author has proved them to contain iron and excess of tannin in the sections of stained leather. He assumes that these nuclei have been protected from the destructive action of micro-organisms in the preliminary processes by an envelope of an organic iron salt and of iron and calcium phosphate, and he goes on to show that as the salt stain progresses the nuclei ultimately disappear, the connective tissues being disintegrated, but not completely decomposed, as they would be by the action of bacteria, as claimed by Becker.

The second kind of stain investigated only applied to horse hides and to leather made therefrom. These are characterised by the presence of strongly pigmented epithelial tissues and the complete absence of calcium phosphate. The writer assumes, therefore,

that these special stains proceed from the brown pigment in the cells of the Malpighi layer and internal epithelial hair sheath in the original skin. This pigment becomes fixed by mineral matter so that decomposition in the limes is resisted.

The author finds that the common factor in the stains examined is the presence of traces of iron. The persistence of the connective elements, especially the nuclei and epithelial tissues, is proved, and the very slight changes that take place in the connective tissue lead the writer to conclude that bacteria play a very small part in the production of the stains he examined.

In this paper M. Abt, for the stains he has examined, takes up practically the opposite view to that enunciated by Becker, who claims that many of the salt stains are largely caused by bacterial action.

The experiments carried out by M. Abt have been carefully performed, and the hypothesis he draws from the results obtained on the stains he has examined appear to be conclusive. The paper is extremely well illustrated by coloured photographs of prepared sections of normal and salt-stained skin and leather which are very clear, and are much more defined than the illustrations usually given in this type of work; in fact, these microphotographs are from magnificent sections, and are beautifully reproduced in the article. They are the finest reproductions of the structure of the hide and skin that have been published in recent times.

M. Abt's work on this subject is of great importance to leather technologists, and, while the author does not claim to have solved all the various kinds of salt stains, he has certainly solved a portion of the difficult problem, and appears to have definitely proved that what the tanner and leather-dresser call salt stains may originate from more than one cause, and may under different conditions vary in appearance and effect upon the skin.

The paper shows that M. Abt has carried out a very careful and systematic investigation, and it is a most valuable contribution to the elucidation of this problem, but in spite of this the subject is still by no means exhausted, and we venture to hope that M. Abt will investigate some other forms of salt stains which he has not yet dealt with. Although the author has undoubtedly clearly proved the cause, traced the history, and shown the effect of certain forms of salt stains, he has not yet described any practical method of avoiding this economic waste which is so vital to the tanners of calf and other similar leathers, but the paper brings us one step nearer this goal.

J. G. P.

## THE BRITISH ASSOCIATION AT BIRMINGHAM.

### SECTION H.

#### ANTHROPOLOGY.

OPENING ADDRESS BY SIR RICHARD C. TEMPLE, BART.,  
C.I.E., PRESIDENT OF THE SECTION.

#### *Administrative Value of Anthropology.*

THE title of the body of which those present at this meeting form a section is, as all my hearers will know, the British Association for the Advancement of Science, and it seems to me therefore that the primary duty of a sectional President is to do what in him lies. for the time being, to forward the work of his section. This may be done in more than one way: by a survey of the work done up to date and an appreciation of its existing position and future prospects, by an address directly forwarding it in some particular point or aspect, by considering its applicability to what is called

the practical side of human life. The choice of method seems to me to depend on the circumstances of each meeting, and I am about to choose the last of those above mentioned, and to confine my address to a consideration of the administrative value of anthropology because the locality in which we are met together and the spirit of the present moment seem to indicate that I shall best serve the interests of the anthropological section of the British Association by a dissertation on the importance of this particular science to those who are or may hereafter be called upon to administer the public affairs of the lands in which they may reside.

I have to approach the practical aspect of the general subject of anthropology under the difficulty of finding myself once more riding an old hobby, and being consequently confronted with views and remarks already expressed in much detail. But I am not greatly disturbed by this fact, as experience teaches that the most effective way of impressing ideas, in which one believes, on one's fellow man is to miss no opportunity of putting them forward, even at the risk of repeating what may not yet have been forgotten. And as I am convinced that the teachings of anthropologists are of practical value to those engaged in guiding the administration of their own or another country, I am prepared to take that risk.

Anthropology is, of course, in its baldest sense the study of mankind in all its possible ramifications, a subject far too wide for any one science to cover, and therefore the real point for consideration on such an occasion as this is not so much what the students of mankind and its environments might study if they chose, but what the scope of their studies now actually is, and whither it is tending. I propose, therefore, to discuss the subject in this limited sense.

What, then, is the anthropology of to-day that claims to be of practical value to the administrator? In what directions has it developed?

Perhaps the best answer to these questions is to be procured from our own volume of "Notes and Queries on Anthropology," a volume published under the arrangements of the Royal Anthropological Institute for the British Association. This volume of "Notes and Queries" has been before the public for about forty years, and is now in the fourth edition, which shows a great advance on its predecessors and conforms to the stage of development to which the science has reached up to the present time.

The object of the "Notes and Queries" is stated to be "to promote accurate anthropological observation (on the part of travellers including all local observers) and to enable those who are not anthropologists themselves to supply information which is wanted for the scientific study of anthropology at home." So, in the heads under which the subject is considered in this book, we have exhibited to us the entire scope of the science as it now exists. These heads are (1) physical anthropology, (2) technology, (3) sociology, (4) arts and sciences. It is usual, however, nowadays to divide the subject into two main divisions—physical and cultural anthropology.

Physical anthropology aims at obtaining "as exact a record as possible of the structure and functions of the human body, with a view to determining how far these are dependent on inherited and racial factors, and how far they vary with environment." This record is based on two separate classes of physical observation: firstly on descriptive characters, such as types of hair, colour of the eyes and skin, and so on, and actual measurement; and secondly on attitudes, movements, and customary actions. By the combined study of observations on these points physical heredity is ascertained, and a fair attribution of the race or races to which individuals or groups belong can be arrived at.

But anthropology, as now studied, goes very much